Applicability Report

Humboldt Station

Corn Belt Power Cooperative

June 11, 2025

The Power of Commitment

OWNER CERTIFICATION

Applicability Report

Humboldt Generating Station

Humboldt, Iowa

Corn Belt Power Cooperative

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Michael Thatcher, Corn Belt Power Cooperative

June 11, 2025

Date

Executive summary

This Applicability Report was prepared under the *Disposal of Coal Combustion Residuals from Electric Utilities – Legacy CCR Impoundments* (CCR Legacy Rule) published May 8, 2024. This Applicability Report documents that the former ash pond at the Humboldt Generating Station in Humboldt, Iowa is a legacy surface impoundment as defined by the CCR Legacy Rule. The content required in an Applicability Report as defined by 40 Code of Federal Regulations (CFR) §257.100(f)(1) is summarized below.

Item	Content and / or Reference in Report
40 CFR §257.100(f)(1)(i) Except as provided in paragraph (f)(1)(iii) of this section, owners and operators of legacy CCR surface impoundments must prepare a report for each legacy CCR surface impoundment no later than Friday, November 8, 2024. The owner or operator has prepared the applicability report when the report has been placed in the facility's operating record as required by § 257.105(k)(1). At a minimum, the report for each legacy CCR surface impoundment must contain:	The details of the Applicability Report are provided.
(A) The name and address of the person(s) owning and operating the legacy CCR surface impoundment with their business phone number and email address.	Humboldt Station was operated by Corn Belt Power Cooperative (Corn Belt) and contact information is provided in Section 2 of this report.
(B) The name associated with the legacy CCR surface impoundment.	The former ash pond is located at Humboldt Station. See Section 3 of this report.
(C) Information to identify the legacy CCR surface impoundment, including a figure of the facility and where the unit is located at the facility, facility address, and the latitude and longitude of the facility.	Figure 1 contains this information. See also Section 4 of this report.
(D) The identification number of the legacy CCR surface impoundment if one has been assigned by the state.	No identification number was assigned to the former ash pond. See Section 5 of this report.
(E) A description of the current site conditions, including the current use of the inactive facility.	The former ash pond is partially vegetated with trees and grasses and was observed to be dry in four test trenches. It contains CCR. See Section 6 of this report
40 CFR §257.100(f)(1)(ii) (A) The owner or operator of any legacy CCR surface impoundment must certify the applicability report required by paragraph (f)(1)(i) of this section with the following statement signed by the owner or operator or an authorized representative: [statement intentionally omitted]	This certification statement is provided prior to the Executive Summary.
40 CFR §257.100(f)(1)(ii) (B) The owner or operator must notify the Agency of the establishment of the facility's CCR website and the applicability of the rule, using the procedures in § 257.107(a) via the “contact us” form on EPA's CCR website.	Corn Belt will complete this notification and post this report.

Contents

Figure index

Appendices

1. Introduction

This Applicability Report was prepared pursuant to the Disposal of Coal Combustion Residuals from Electric Utilities – Legacy CCR Impoundments (CCR Legacy Rule) published May 8, 2024. The CCR Legacy Rule addresses former coal combustion residual (CCR) impoundments and CCR management units at current and former steam electric utilities that were not addressed in previous federal rulemaking. The requirements for an Applicability Report are defined in 40 Code of Federal Regulations (CFR) §257.100(f)(1). This report addresses the long-closed Humboldt Generating Station, in Humboldt Iowa (Humboldt Station). Humboldt Station operated between March 1950 and was shut down in January 1990.

Between 1954 and 1985, Humboldt Station operated four generating units. Coal was the primary fuel although natural gas was also a fuel for all four units. Humboldt Station sluiced CCR to an on-site ash pond. The ash pond solids were periodically removed to an on-site landfill. The on-site landfill was closed in 1999 under Iowa Department of Natural Resources permit number 45-SDP-4-90. (Preston Engineering, Inc. [PEI], 2000).

The conclusion of this Applicability Report is the former ash pond at the former Humboldt Station in Humboldt, Humboldt County, Iowa constitutes a legacy surface impoundment as defined by 40 CFR §257.53 because the Humboldt Station ash pond has been found to contain CCR and likely liquids on or after October 19, 2015 as documented in this Applicability Report.

This report was prepared subsequent to the deadlines presented in the Legacy CCR Rule due to the long-closed nature of the site. The preamble to the Legacy CCR Rule describes a limited universe of legacy CCR impoundments and did not appear to consider a facility that had not operated for more than 30 years.

2. Owner

The owner and former operator of Humboldt Station is Corn Belt Power Cooperative (Corn Belt), located at 1300 13th Street North in Humboldt, Iowa. A general phone number and email address for Corn Belt are: 515-332-2571 and **humboldtccr@cbpower.coop**.

3. Operating Name

The former ash pond was part of Humboldt Station.

4. Identification Information

The facility is located at SE ¼, Section 19, T91N, R28W, Humboldt County, Iowa (Figure 1). A representative latitude and longitude of the former ash pond is 42.6768, -94.1935. The former ash pond was used as a CCR sluice pond from 1950 to 1989, when the plant was in operation. Units 1 and 2 were removed from service in 1985 and coal burning ceased in 1989. Units 3 and 4 were mothballed in January 1990. The site layout is shown on Figure 2.

5. Identification Number

No permit number was assigned to the former ash pond. The adjacent CCR landfill was assigned Iowa Department of Natural Resources (IDNR) Permit Number 45-SDP-4-90.

6. Current Site Conditions

Humboldt Station began operation in 1950. Based on discussions with former plant personnel coupled with aerial photograph observations (Appendix A), CCR was managed by sluicing to the ash pond through the operational life of Humboldt Station. No original drawings showing construction details could be located. The site layout, as it appears today, is shown on Figure 2.

Periodically, CCR was excavated and deposited in the CCR landfill, located to the west of the ash pond. The last excavation occurred in 1978; however, the last CCR was sluiced to the pond in 1989 [PEI, 1995]. Operation of coal units at Humboldt Station was limited in the 1980s. It was estimated that the former ash pond contained 8,700 cubic yards of ash at closure (PEI, 1995). The closure plan for the former ash pond was to grade CCR over the ash pond to an elevation similar to original site conditions and then seed the CCR surface (PEI, 1995).

The former ash pond is not used for any operational or recreational purpose. Trees of various diameters are growing in the former ash pond and some areas were observed to have muddy soils at the surface.

The majority of the former Humboldt Station is fenced with a locked gate at the north end at the entrance road. The river-facing boundary of the property is not fenced. There is no ready access from the Des Moines River to the ash pond. Although evidence of horses was observed on the berm located adjacent and to the south of the former ash pond, there was no evidence of trespassers or activity on or in the former ash pond. The Gotch Spur, a discontinuous part of the Three Rivers Trail, is located north of the fenced perimeter along former railway track bed. The buildings on site are no longer actively used, aside from storage. Historical aerial photographs showing the site over time are provided in Appendix A.

6.1 Historical Information

No information about the original grading of the former ash pond was located. A site plan from original plant construction (Appendix B) does not include the ash pond area but does show the ash sluice pipe entering the area of the ash pond.

Two borings through the ash pond were documented in a September 22, 1982 letter provided in Appendix C. The borings reported 3.5 feet and 12 inches of CCR from the pond surface. The conditions in 1982 represent post 1978 excavation and Humboldt Station continued to use coal into 1989, however, operation was limited. Internal records estimated 232,120 cubic feet (approximately 8,600 cubic yards) of CCR were placed in the ash pond since the 1979 excavation (Appendix D). The aerial survey from 1981 included in Appendix E occurred after an estimated 62,400 cubic feet (approximately 2,300 cubic yards) were added to the ash pond since the 1979 excavation. The 1981 survey represents conditions similar to conditions when the two soil borings were advanced.

A hand sketch of the ash pond dated 1995 was located (Appendix F). The location of the cross section in the pond and vertical datum are unknown. The sketch indicated that prior excavation of the pond were as deep as 1040.5 feet with the majority of the excavation to 1042.5 feet. The 1981 aerial survey shows a low elevation of 1042.5 feet mean sea level (MSL) near the outlet of the ash sluice pipe (Appendix E) and a lowest point of 1040.6 feet MSL in the western end of the ash pond. The sketch appears to layout a concept of grading CCR to an elevation of 1045.75 feet across the pond indicating a typical CCR thickness of 3.25 feet over a majority of the pond. The date on the sketch

appears consistent with the 1995 closure work plan (PEI, 1995). No documentation of ash pond closure activities was located; the closure report for the CCR landfill (PEI, 2000) does not address the ash pond.

Attachment D of the closure plan (PEI, 1995) includes a drawing of the ash pond noted with 1995 elevations and 235,000 cubic feet (approximately 8,700 cubic yards) of CCR. The grading notes on this drawing are for a lagoon which is likely the former coal pile runoff pond but are inconsistent with the work plan information for the ash pond.

6.2 Preliminary Field Investigation

On March 13, 2025 a site visit and preliminary investigation was conducted in the former Humboldt Station ash pond. Select photographs collected during the site visit are provided in Appendix G. In the area of the former ash pond, four test trenches (Photographs 1-6) were excavated to record visual observations of CCR. The locations of these test trenches are shown on Figure 3. Preliminary observations from the test trenches revealed evidence of remaining CCR including ash and slag. There was no water observed during the excavation of the test trenches. The material was not consistent across the former ash pond.

Test trench 1 was excavated near the middle of the former ash pond and CCR was estimated to extend 20 inches below the surface. There were cinders and slag evident at the ground surface. Test trench 2 encountered a dry, dark sand at 4’8’’ below ground surface marking the apparent native base. Test trench 2 was located near the former ash sluice pipe outfall and the location was selected due to the likelihood of a greater thickness of CCR. Test trench 3 was excavated in the east end of the former ash pond and encountered a native tan sand at approximately 3’6’’ below grade. The top 12 to 18 inches at this location were an organic topsoil whereas test trenches 1 and 2 exhibited CCR at the surface. Test trench 4 was located toward the western end of the former ash pond in an area with a muddy surface and grass and cattails. CCR is estimated to start about 6 inches below the surface at this location and extend to about 3 feet below grade. From 3 feet to 6 feet, the silty and sandy soil in the trench did not appear native, but did not appear to be CCR.

No free water was encountered in any of the four test trenches. All four trenches are believed to have reached native soil, however only in Test Trench 3 was the lighter-colored native sand observed. In other cases, the texture and nature of the excavated spoils indicated native sands or clays rather than CCR. Although no free liquids were observed during the test trenching, there was no clear cover system preventing potential infiltration of precipitation. Therefore, the former ash pond is assumed to potentially contain liquids. This assumption may be revisited in the future.

No apparent paths for significant inflow of stormwater were observed. Some drainage from the road to the north and berm to the south would likely shed toward the former ash pond, but surrounding topography directs the majority of precipitation elsewhere.

There was no consistent vegetative cover, however, years of tree growth and assorted shrubs and grasses were evident (Photographs 7-10). Aerial photographs (Appendix A) also show heavy vegetation in the former ash pond area. There was no apparent pooled water despite recent rains. The west side of the former ash pond did have slightly muddy conditions and cattails – evidence of past standing water.

The observed conditions did not indicate dust or erosion concerns. The ash pond appears to be incised. The berm along the south side of the former ash pond bordering the Des Moines River appeared intact. The berm is vegetated on the crest with grasses. During operation of the ash pond, it is possible the berm was raised to its current height, but the observed distance from the crest to the surface of the ash pond and the incised nature of the north side of the pond suggest incision for the entire pond’s construction relative to the current surface. The raised area to the north of the former ash pond was a railroad bed during the operating life of Humboldt Station. Figure 4 shows publicly available LiDAR data for elevations of the former ash pond. The incised nature of the former ash pond is evident by the topography. Furthermore, the closure plan (PEI, 1995) indicated the planned grading of the ash pond would restore the surface to near-original elevations. No closure construction documentation was located. The southern berm crest is shown in Photographs 11 and 12.

The estimated area of the ash pond is 1.7 acres. At an estimated average CCR thickness of 3 feet, a preliminary volume estimate is 5.1 acre-feet or 8,800 cubic yards. This aligns with the 8,700 cubic yard volume estimate at the time of landfill closure (PEI, 1995). The trenching investigation and available records indicate the former Humboldt Station ash pond is below the thresholds identified in 40 CFR 257.73(b) of 1) height of 5 feet or more and a storage volume of 20 acre-feet or more or 2) a height of 20 feet or more.

6.3 Initial Data Gaps

The facility will be subject to the Facility Evaluation Report process (40 CFR 257.75(b)). A component of this process is to identify unknown facts about the current facility. Preliminary unknown conditions include:

– Hydraulic conditions relative to precipitation
  - Role of existing vegetation in controlling infiltration
  - Existing surface water flow patterns

7. Conclusion

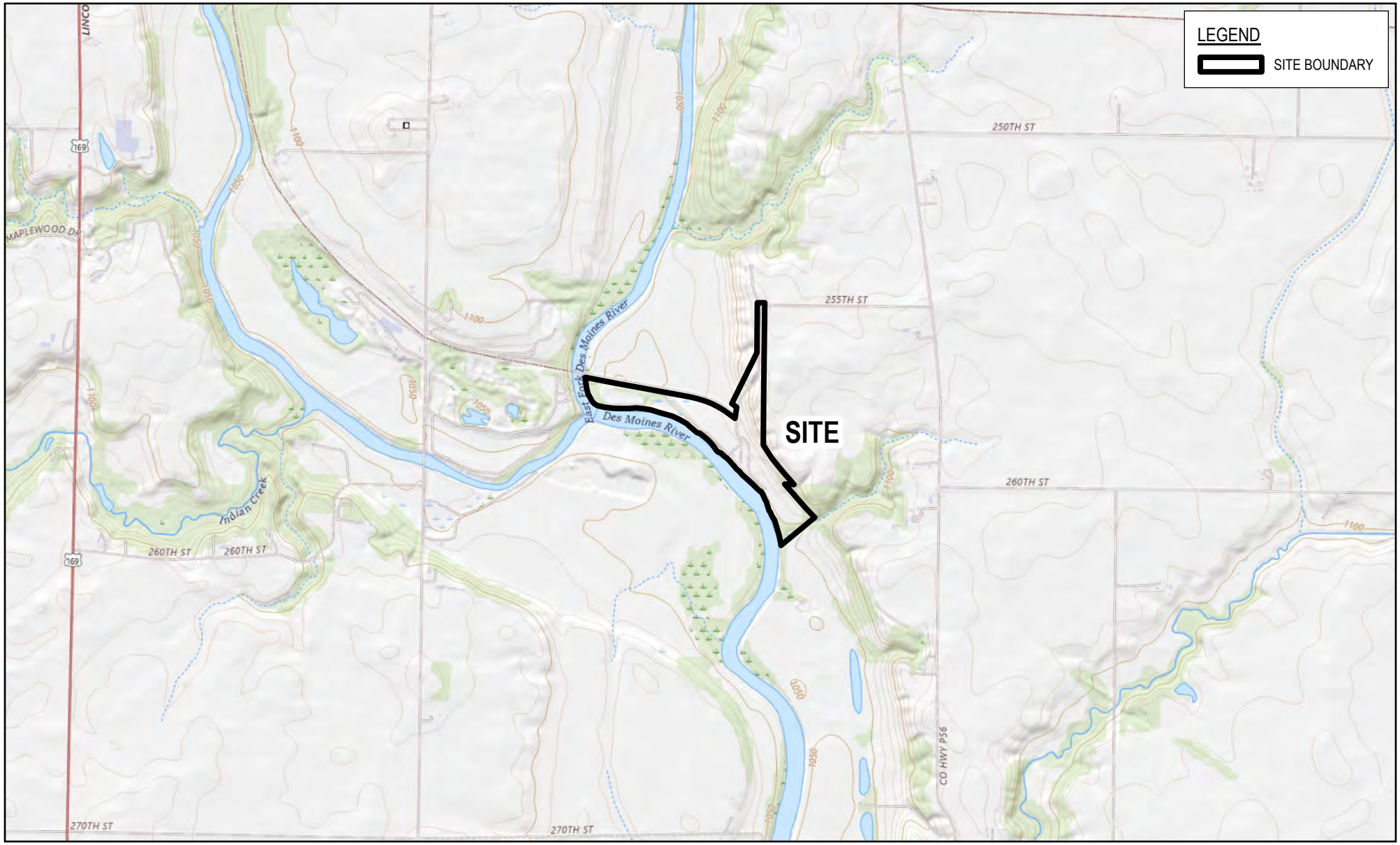
Closure activities of the Humboldt Station former ash pond included grading of CCR but consistent cover soil was observed. Although no water was observed in the former ash pond, the lack of a cover indicates precipitation may infiltrate. The last addition of CCR to the former ash pond was in 1989. The former ash pond is classified as a legacy CCR surface impoundment as defined by the Legacy CCR rule; *a CCR surface impoundment that no longer receives CCR but contained both CCR and liquids on or after October 19, 2015, and that is located at an inactive electric utility or independent power producer*.

8. References

Preston Engineering, Inc., 1995. Corn Belt Power Cooperative – Humboldt Station Ash Storage Closure Work Plan. December 1995. **IDNR Document 68351**.

Preston Engineering, Inc., 2000. Corn Belt Power Cooperative – Humboldt Station Landfill Closure Report. February 7, 2000. **IDNR Document 50788**.

Figures



Paper Size ANSI A

0 500 1,000 1,500 2,000

Feet

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 15N

N

GHD

CORN BELT POWER COOPERATIVE
FORMER HUMBOLDT STATION
HUMBOLDT, IOWA

Project No. **12659218**
Revision No. **-**
Date **05/30/2025**

SITE LOCATION

FIGURE 1

Q:\GIS\PROJECTS\12659000s\12659218\GIS\Maps\Deliverables\RPT\12659218_RPT001\12659218_RPT001.aprx
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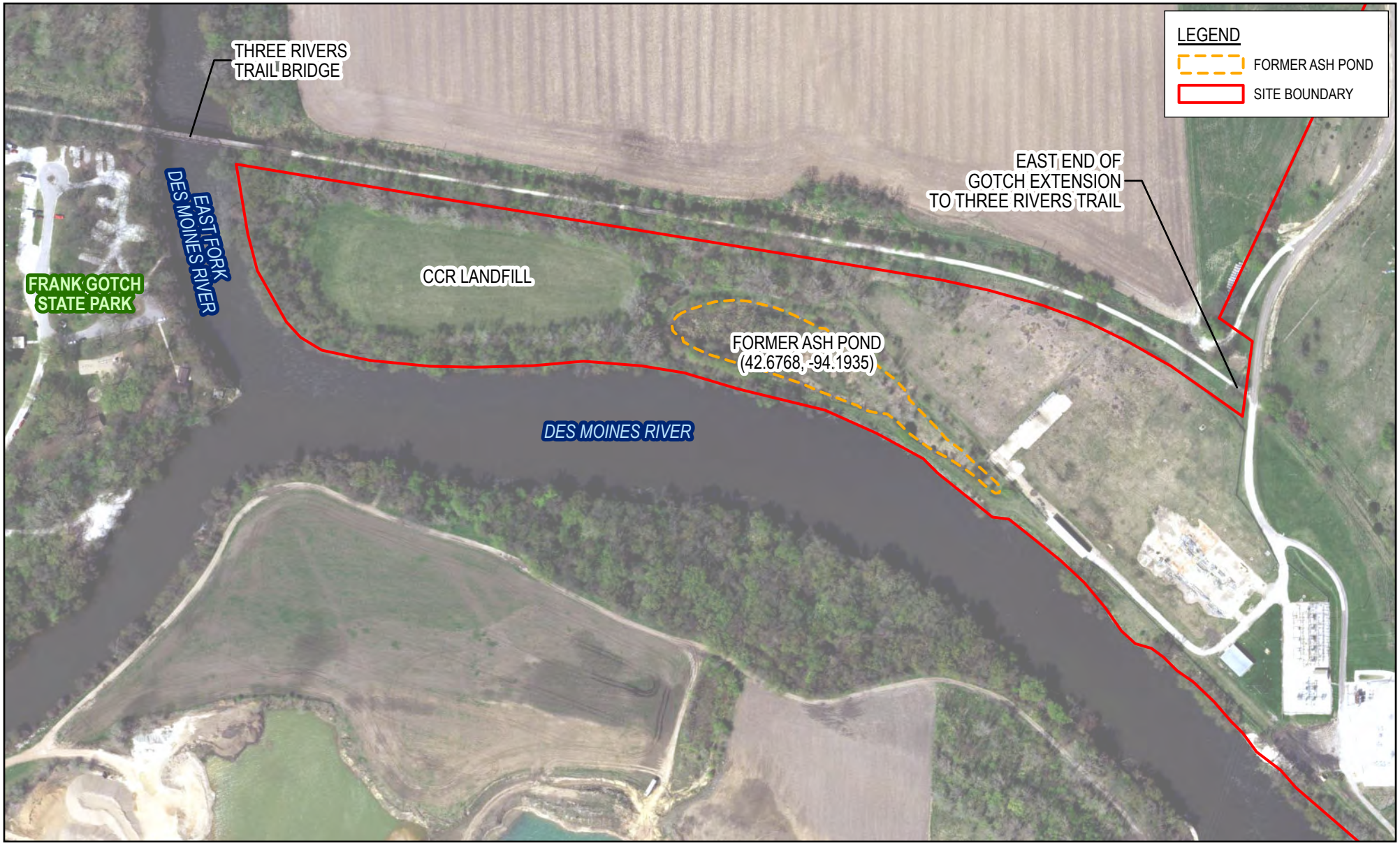
Data source: USGS The National Map. Created by: rjcoy



Paper Size ANSI A

0 100 200 300

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 (2011) IaRCS zone 4

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GHD

CORN BELT POWER COOPERATIVE
FORMER HUMBOLDT STATION
HUMBOLDT, IOWA

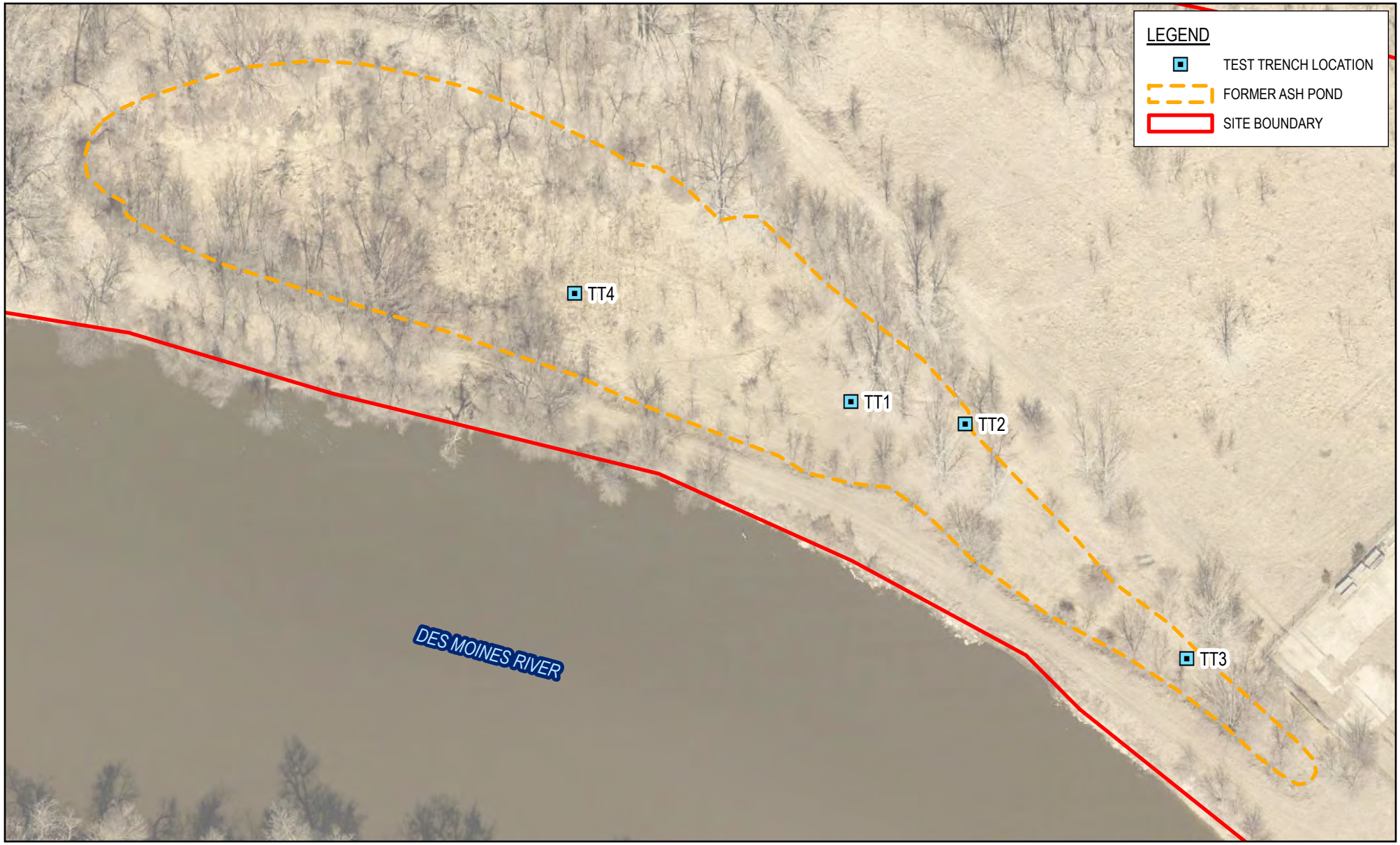
Project No. **12659218**
Revision No. **-**
Date **06/02/2025**

SITE OVERVIEW

FIGURE 2

Q:\GIS\PROJECTS\12659000s\12659218\GIS\Maps\Deliverables\RPT\12659218_RPT001\12659218_RPT001.aprx
Layout: 12659218_002_SiteOverview; Print date: 02 Jun 2025 - 12:47

Data source: Aerial Imagery: State of Iowa 2016-2018. Created by: rjcoy



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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 (2011) IaRCS zone 4

N

GHD

CORN BELT POWER COOPERATIVE
FORMER HUMBOLDT STATION
HUMBOLDT, IOWA

Project No. **12659218**
Revision No. **-**
Date **06/02/2025**

TEST TRENCH LOCATIONS

FIGURE 3

Q:\GIS\PROJECTS\12659000s\12659218\GIS\Maps\Deliverables\RPT\12659218_RPT001\12659218_RPT001.aprx
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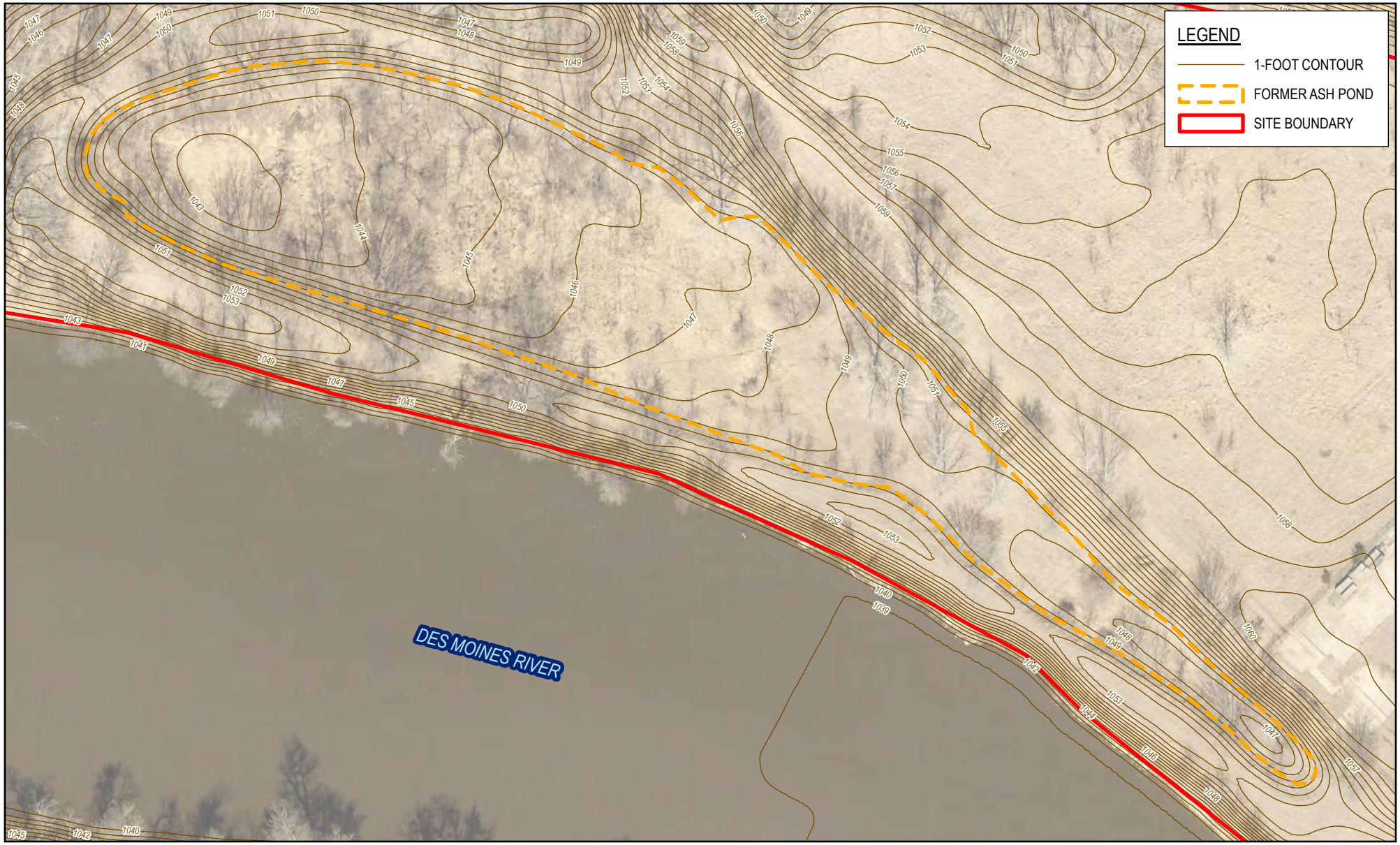
Data source: Imagery Humboldt County, 2023. Created by: rjcoy



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 (2011) IaRCS zone 4

N

GHD

CORN BELT POWER COOPERATIVE
FORMER HUMBOLDT STATION
HUMBOLDT, IOWA

Project No. **12659218**
Revision No. **-**
Date **06/02/2025**

SITE TOPOGRAPHY

FIGURE 4

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Data source: Topography: 2020 North Central Iowa Lidar; Imagery Humboldt County, 2023. Created by: rjcoy

Appendices

Appendix A

Aerial Photo Decade Package

12659218 - Humboldt, IA

Humboldt Station

Humboldt, IA 50548

Inquiry Number: 7898419.1

February 18, 2025

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

02/18/25

Site Name:

12659218 - Humboldt, IA
Humboldt Station
Humboldt, IA 50548
EDR Inquiry # 7898419.1

Client Name:

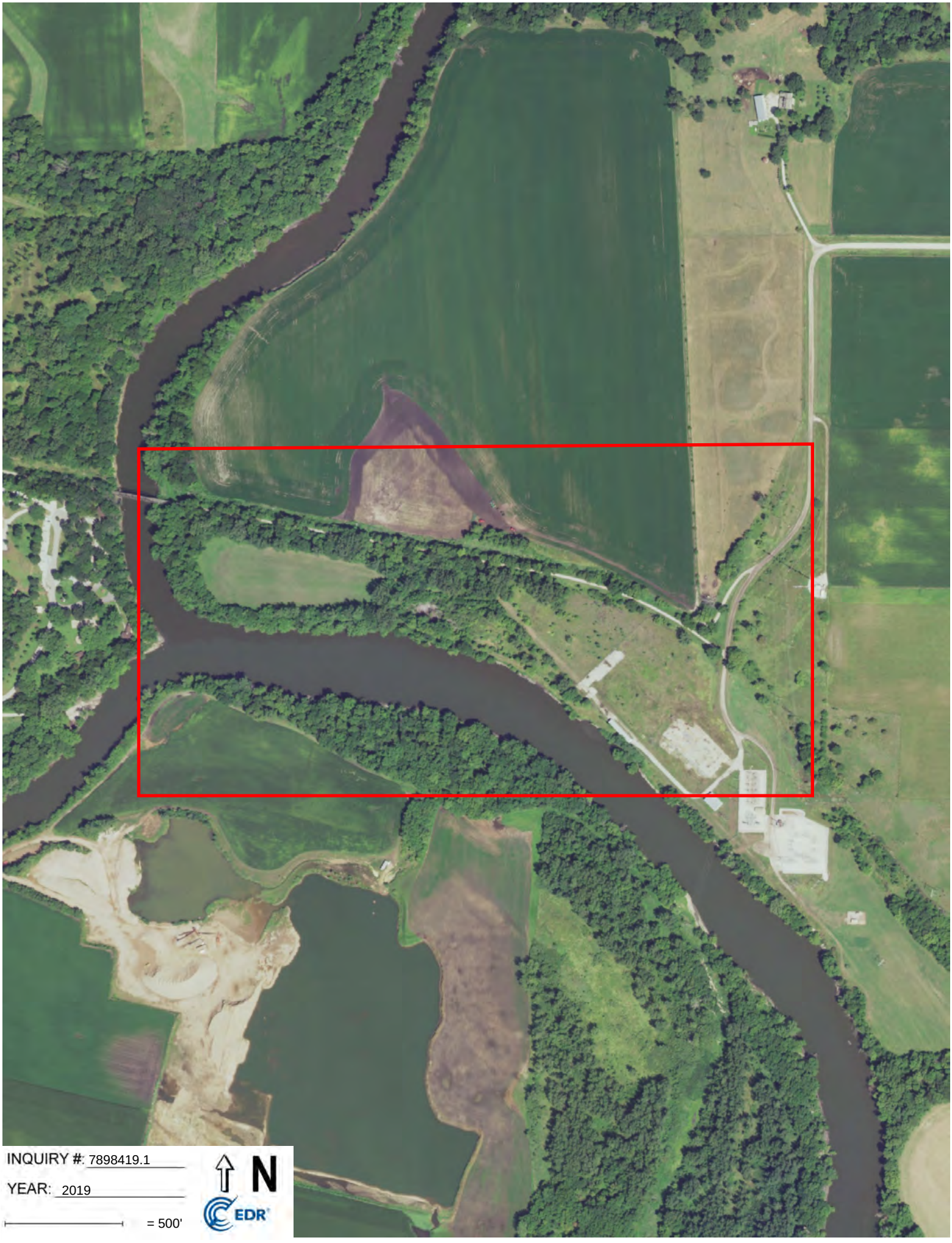
GHD
6300 N. River Road, Suite 302
Rosemont, IL 60018
Contact: Mary Grace Armbrust

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2019	1"=500'	Flight Year: 2019	USDA/NAIP
2015	1"=500'	Flight Year: 2015	USDA/NAIP
2011	1"=500'	Flight Year: 2011	USDA/NAIP
2008	1"=500'	Flight Year: 2008	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1990	1"=500'	Acquisition Date: January 01, 1990	USGS/DOQQ
1984	1"=500'	Flight Date: January 01, 1984	USGS
1978	1"=500'	Flight Date: May 14, 1978	USGS
1972	1"=500'	Flight Date: January 01, 1972	USGS
1965	1"=500'	Flight Date: January 01, 1965	USDA
1953	1"=500'	Flight Date: January 01, 1953	USDA
1950	1"=500'	Flight Date: June 01, 1950	USGS
1939	1"=500'	Flight Date: January 01, 1939	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.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EDR


INQUIRY #: 7898419.1
YEAR: 2015
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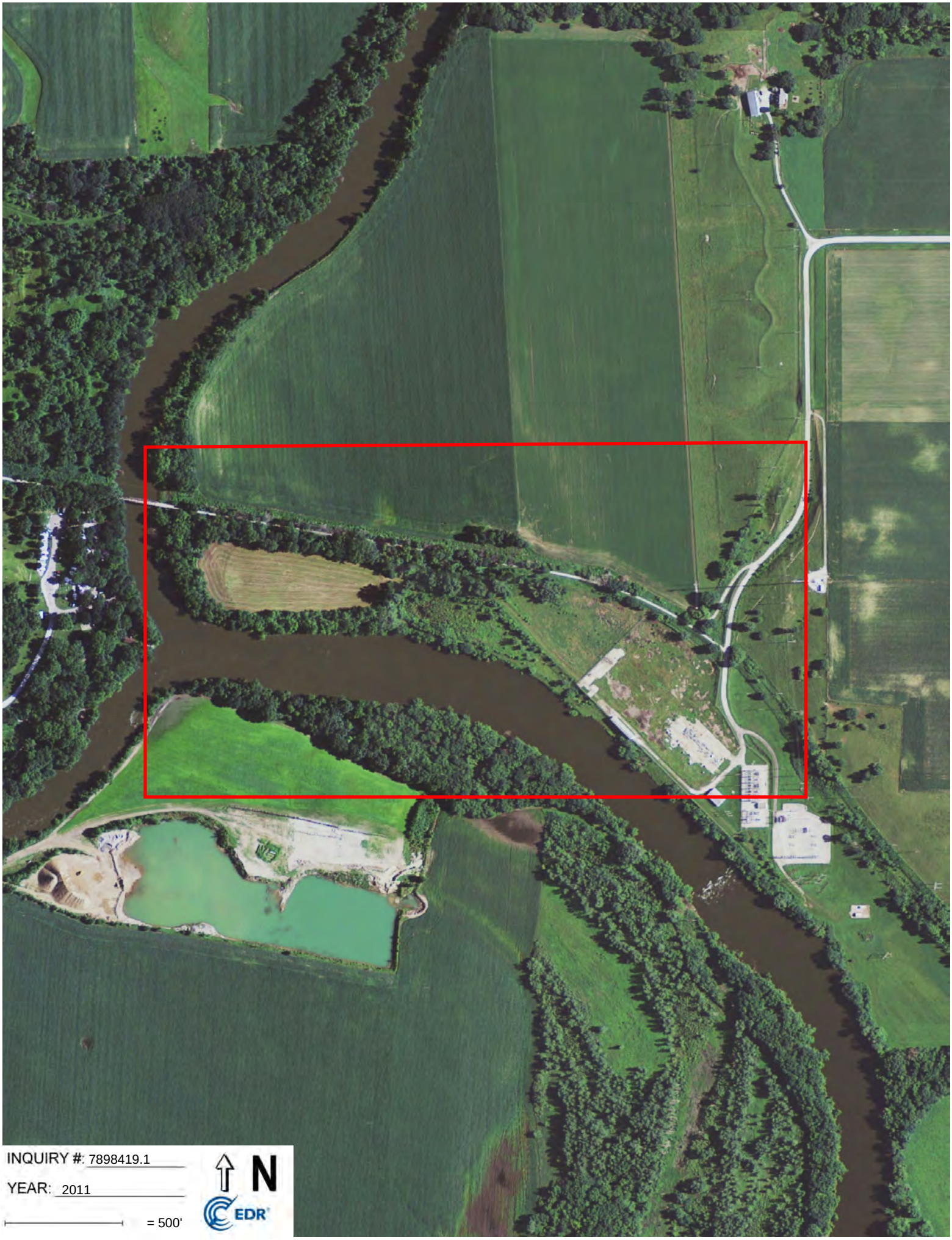
EDR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EDR


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EDR

INQUIRY #: 7898419.1

YEAR: 2005

= 500'

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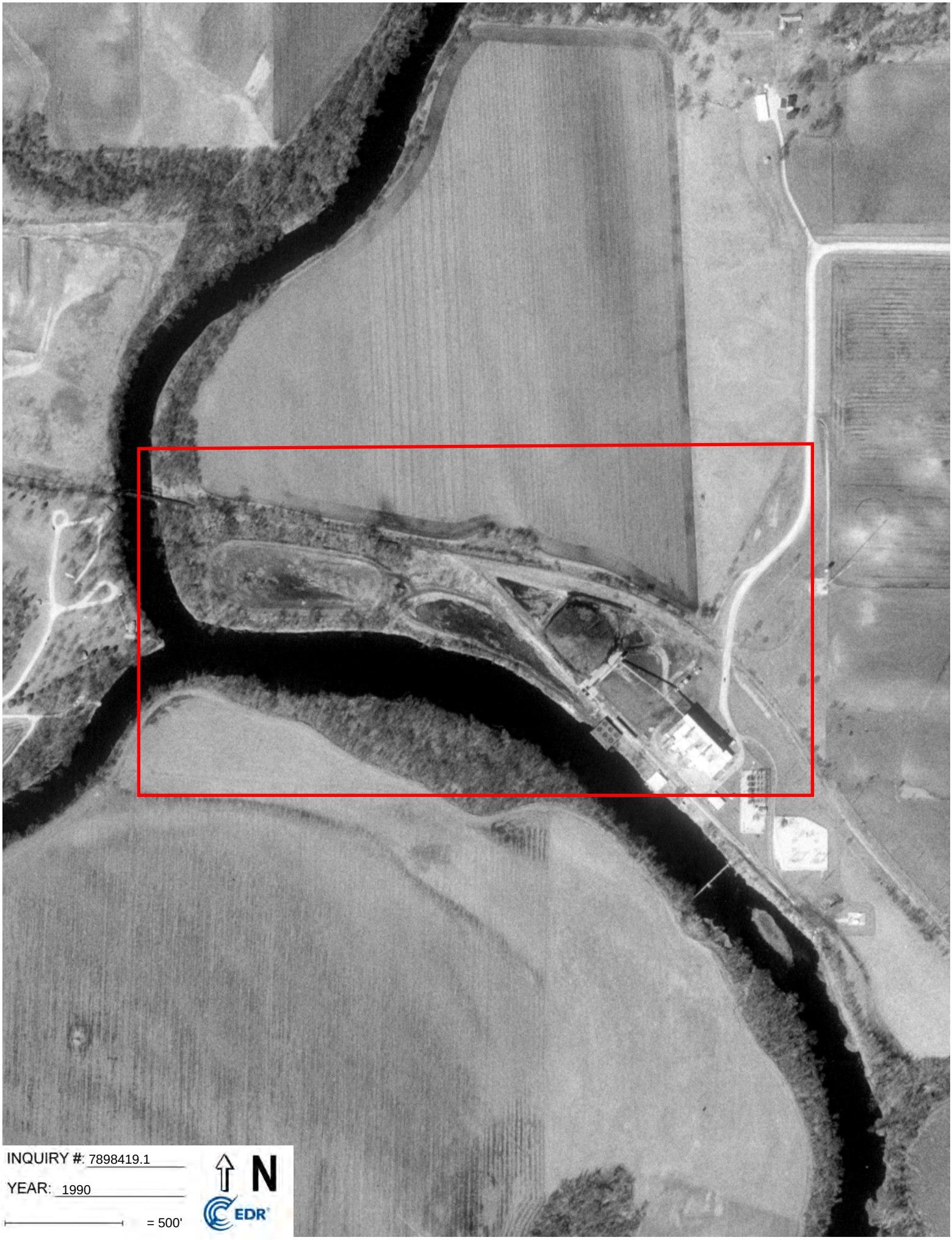
EDR



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EDR

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EDR

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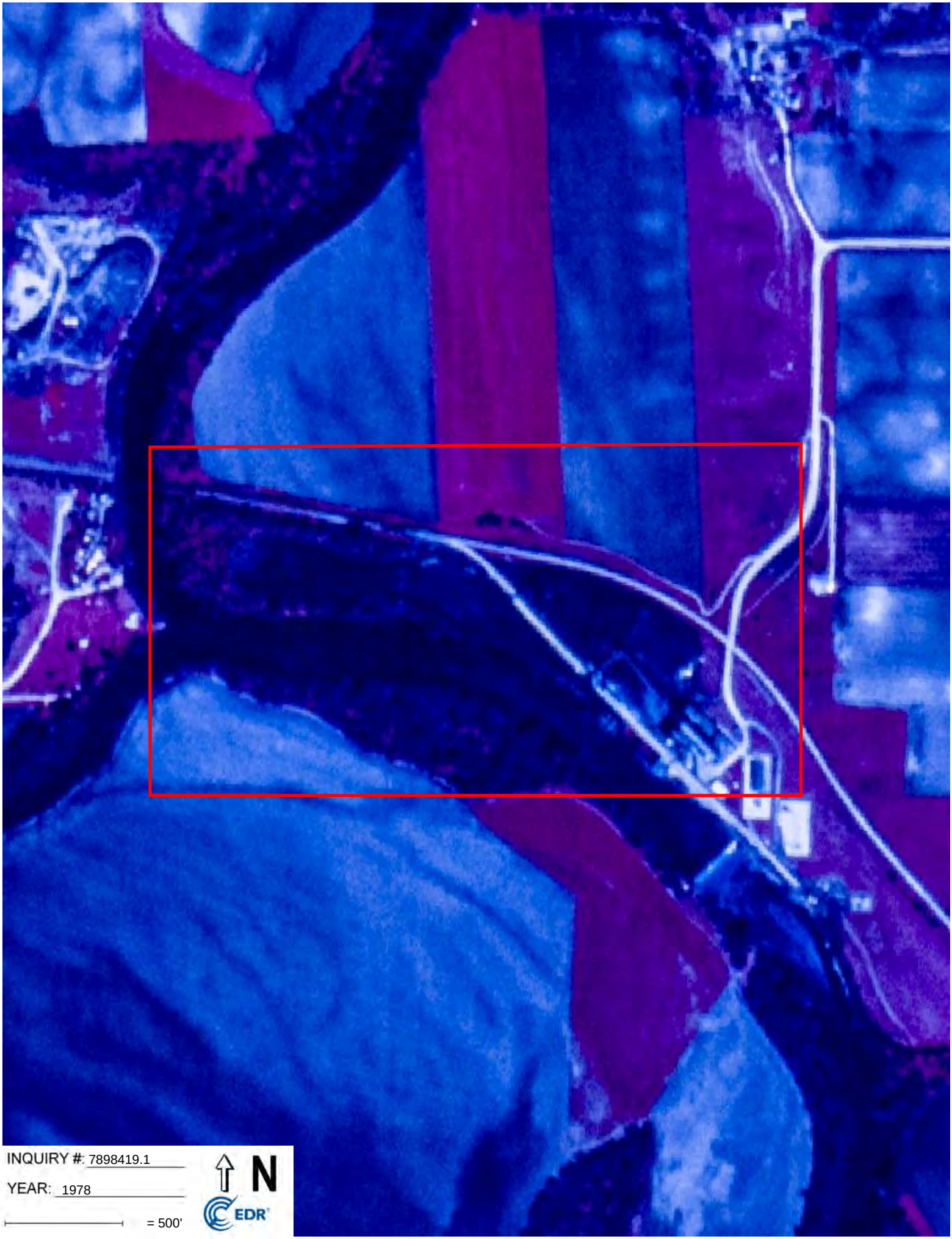

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EDR

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EDR

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YEAR: 1965

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EDR

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YEAR: 1953

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EDR

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EDR

INQUIRY #: 7898419.1

YEAR: 1939

= 500'

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EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

Appendix B

1951 Site Plan


N
MINNEAPOLIS & ST. LOUIS R.R.
ACCESS ROAD
CONSTRUCTION BASE LINE
Tractor Shed
Cramer Farm Conduit
Telephone pole
2 - 3/4" Conduit for Telephone & Radio
For location of Electrical Manholes, see drwg. 1081-84
PARKING
MAIN BUILDING
SUBSTATION
Substation Fence - For substation arrangement, see drwg. 1081-84
Railroad Spur
SURVEY BASE LINE
SECTION 20
SECTION 19
SECTION 30
Sta. 0+00 Survey Base Line
For details of Coal Handling equipment, see drwgs. 1081-20 & 21
TRANSFER TOWER
COAL CONVEYOR
COAL STORAGE AREA
Support Piers and Concrete foundations for Coal Conveyor and Transfer Tower are not shown and their location will be dependent upon equipment furnished. See dwg. 1081-X143
WELL PUMP HOUSE
Septic Tank
EMPLOYEE'S PARKING
Chimney Foundation
Plugged Y for future Gas Meter House
Drain Line
Cooling Water Tunnel
Coal Pit
ORIGINAL RAILROAD SIDING
NEW UNDERTRACK HOPPER (7/75)
NEW RAILROAD SIDING (APPROX. 1300' 7/75)
Location of supports for Ash Pipe to be dependent upon equipment furnished. See dwg. 1081-F249
THAW SHED
ASH PIPE
OVERFLOW STRUCTURE
36" Concrete Pipe
COOLING WATER PUMP HOUSE
Cooling Water Discharge Tunnel
For Cooling Water System Arrangement, see drwgs. 1081-70 & 71
Retaining Wall
Over Flow Spillway
Cooling Water Discharge Headwall
6" V.S.P. with Standard Headwall at outlet
Elev. 49.8
DES MOINES RIVER

REFERENCE DRAWINGS

Water Supply System	1081-7
Coal Handling - Sheet #1	1081-20
Cooling Water System General Arrangement	1081-71
Main Building Architectural	1081-77
Electrical Manholes & Substation Foundations	1081-84

NOTES

(6/6) Contract Symbol, see legend on drwg 1081-77
All building dimensions are to outside concrete line unless otherwise noted
Elevations, such as 60.0, refer to 1060.0.
For pipe line elevations see also 1081-17 & 18
For 3rd unit see drwgs. in 1233 series.

CORN BELT POWER COOPERATIVE

HUMBOLDT PLANT

GENERAL SITE PLAN

REVISIONS

NO.	DATE	ITEM	PREP	CKD.	APP.
1	9-10-48	General	O.P.	NEW	HAS
2	4-27-51	Final	NF	BLS	SRF

STANLEY ENGINEERING COMPANY
MUSCATINE IOWA

DRAFTSMAN WCB. & JMB.	DATE July 2, 1948	No.
TRACER	SCALE 1" = 50'	1081-3
CH. DRAFTS. JER	ENGINEER LSS	
CHECKER LSS	APPROVED	

Appendix C

1982 Soil Borings

Terracon
CONSULTANTS, INC.
333 S.W. Ninth-Suite J
P.O. Box 4921
Des Moines, Iowa 50306
(515) 244-3184

Gerald R. Olson, P.E.
R. Wayne Weinfurter, P.E.
James A. Cunningham, P.E.
C. Fred Schoell, P.E.
Craig K. Denny, P.E.
John F. Hartwell, P.E.
David M. Pajula

September 22, 1982

Corn Belt Power Coop
Humboldt, Iowa 50548

Attention: Mr. Dan Adams

RE: Subsurface Exploration
Ash Pond Area
Corn Belt Power Coop
Humboldt, Iowa
Job No. 882528

Dear Mr. Adams:

Enclosed with this letter are the boring logs of the two borings performed in the ash pond area, and a location diagram.

These borings were performed at the instructions of Corn Belt Power Coop and are for in-house information. They are not related to the Coal Pile Runoff Holding Pond project.

The borings were performed with a truck-mounted drill rig and the boreholes were advanced with continuous flight augers. Samples of the soils were obtained primarily by the split-barrel sampling procedure although one shelby tube sample was obtained. Standard penetration resistance values in blows per foot are indicated on the boring logs. The samples were returned to the laboratory for testing and classification.

Water content tests were performed on each sample and in addition, an unconfined compression and a dry density test were performed on the moderately cohesive sandy silt from boring 1. The results of the laboratory tests are indicated on the boring logs.

Boring 4, which is the northernmost boring performed, reveals 3.5 feet of coal ash fill underlain by 4 feet of stiff, moderately cohesive, sandy silt little

clay, and then dense, fine to medium sand little gravel trace silt to the bottom of the boring at 13.5 feet. Auger refusal on apparent bedrock occurred at the 13.5 foot depth. In boring 5, there was 12 inches of ash fill underlain by fine to coarse sand to a depth of 3.5 feet and then highly weathered limestone was penetrated to a depth of 10 feet, the bottom of the boring.

The stratification lines shown on the boring logs represent the approximate boundary lines between soil types; in situ, the transition between materials may be gradual.

Groundwater was encountered at a depth of 5 feet in boring 4 and 2.5 feet in boring 5, with the corresponding elevation being approximately 1043. These readings are believed to represent the groundwater table at the time the borings were performed. However, they may represent perched water above bedrock. Fluctuations may occur with seasonal variations in the amount of rainfall, runoff, Des Moines River level and other factors not evident at the time the borings were performed.

We have not been asked to interpret the data or to make any design or construction recommendations concerning these borings. Obviously, we cannot therefore assume any responsibility or liability for interpretation of this data. Should you, in the future, wish us to make such interpretations for a project, we would be pleased to do so in accordance with our Schedule of Fees.

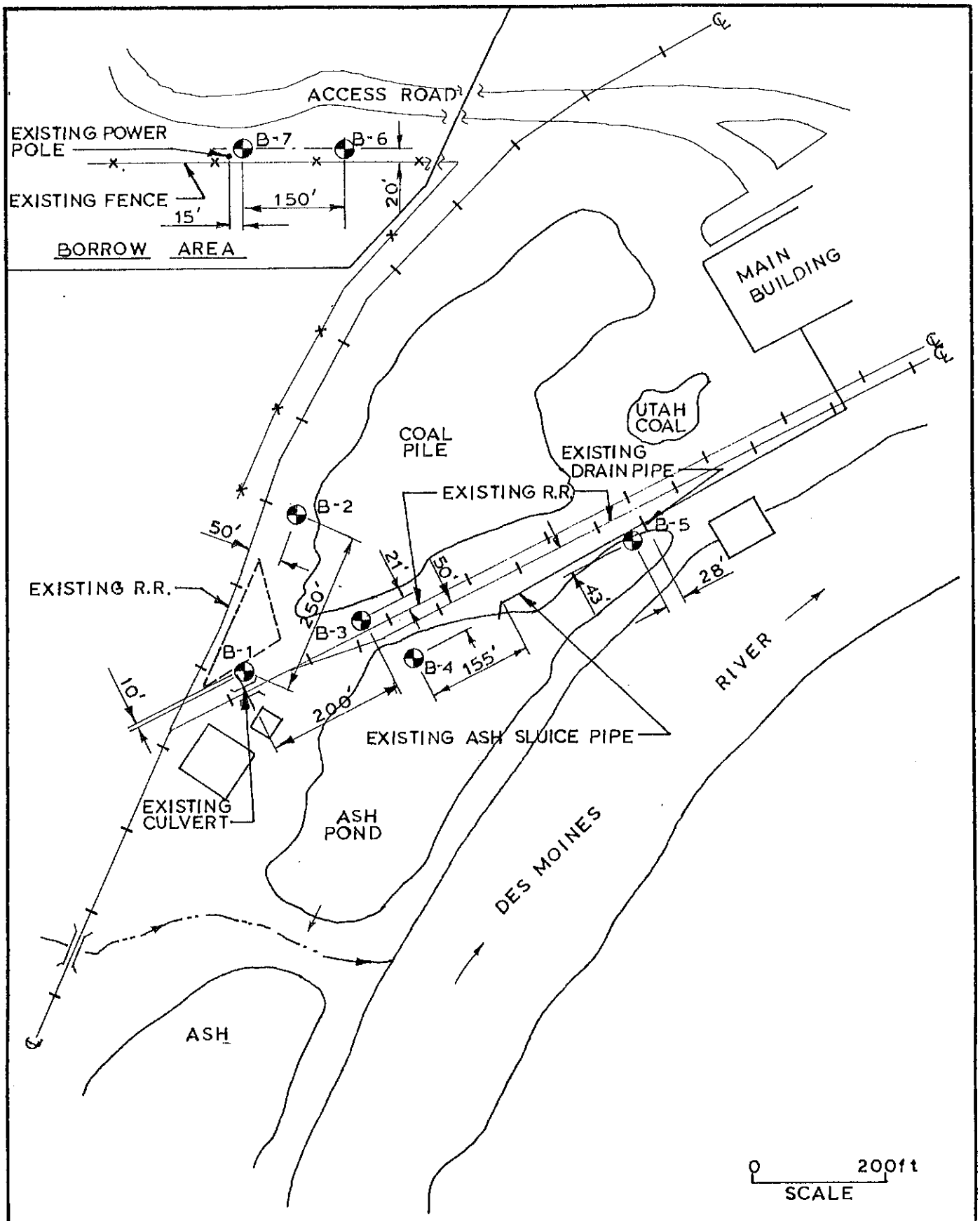
If there are any questions with regard to the data presented, please feel free to contact us.

Very truly yours,

TERRACON CONSULTANTS, INC.

James A. Cunningham, P.E.
Iowa #7738

JAC/wsh



BORING LOCATION DIAGRAM
PROPOSED COAL PILE RUNOFF HOLDING POND
CORN BELT POWER COOP
HUMBOLDT, IOWA

Terracon Consultants, Inc.
Cedar Falls Cedar Rapids Davenport Des Moines, IA
Kansas City Wichita, KS
Oklahoma City Tulsa, OK

	DJW	9/15/82	882528

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS	:	Split Spoon—1⅜" I.D., 2" O.D., unless otherwise noted	PS	:	Piston Sample
ST	:	Shelby Tube—2" O.D., unless otherwise noted	WS	:	Wash Sample
PA	:	Power Auger	FT	:	Fish Tail
HA	:	Hand Auger	RB	:	Rock Bit
DB	:	Diamond Bit—4 in, N, B	BS	:	Bulk Sample
AS	:	Auger Sample	PM	:	Pressuremeter
HS	:	Hollow Stem Auger	DC	:	Dutch Cone
VS	:	Vane Shear			

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch OD split spoon, except where noted.

WATER LEVEL MEASUREMENT SYMBOLS:

WL	:	Water Level	WS	:	While Sampling
WCI	:	Wet Cave In	WD	:	While Drilling
DCI	:	Dry Cave In	BCR	:	Before Casing Removal
AB	:	After Boring	ACR	:	After Casing Removal

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable ground water levels. In low permeability soils, the accurate determination of ground water elevations is not possible in even several days observation, and additional evidence of ground water elevations must be sought.

DESCRIPTIVE SOIL CLASSIFICATION:

Coarse Grained or Granular Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50 % of their dry weight retained on a #200 sieve; they are described as: clays, or clayey silts if they are cohesive, and silts if they are slightly cohesive or non-cohesive. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, granular soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency and plasticity. Example: Clayey silt, trace sand moderately plastic, stiff; silty fine sand, trace gravel, medium dense.

GRAIN SIZE TERMINOLOGY

Major Component Of Sample	Size Range
Boulders	Over 8 in. (200mm)
Cobbles	8 in. to 3 in. (200mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 2mm)
Sand	#4 to #200 sieve (2mm to .074mm)
Silt or Clay	Passing #200 sieve (0.074mm)

RELATIVE PROPORTIONS

Descriptive Term(s) (Of Components Also Present in Sample)	Percent of Dry Weight
Trace	1–10
Little	10–20
Some	20–35
And	35–50

RELATIVE DENSITY OF GRANULAR SOILS:

N-Blows/ft.	Relative Density
0–3	Very Loose
4–9	Loose
10–29	Medium Dense
30–49	Dense
50–80	Very Dense
80+	Extremely Dense

CONSISTENCY OF COHESIVE SOILS:

Unconfined Compressive Strength, Qu, psf	Consistency
◄ 500	Very Soft
500– 1,000	Soft
1,000– 2,000	Medium
2,000– 4,000	Stiff
4,000– 8,000	Very Stiff
8,000–16,000	Hard
► 18,000	Very Hard

PLASTICITY OF FINE GRAINED SOILS:

Term	Plasticity Index
None to slight	0– 3
Slight	4– 7
Moderate	8–25
High	► 25

LOG OF BORING NO. 4

OWNER
CORN BELT POWER COOP

ARCHITECT-ENGINEER

SITE
HUMBOLDT, IOWA

PROJECT NAME
COAL PILE RUNOFF HOLDING POND

Sample No.	Type Sample	Sampling Distance	Recovery	Blows/ft.	Unconfined Compressive Strength-lbs./ft.^{2}	Water Content-%	Dry Density-lbs./ft.^{3}	Unified Class. Symbol	Depth	Elevation	Description
											Surface Elevation 1046.0
	PA										COAL ASH FILL
											(3.5)
1	ST	24	20		2150	20.8	105	CL ML	5		SANDY SILT, LITTLE CLAY, Dark Gray, Stiff
	PA										(7.5)
2	SS	18	18	52		15.9		SP	10		FINE TO MEDIUM SAND, TRACE SILT, LITTLE GRAVEL, Red Brown and Gray Brown, Dense
	PA										(13.5)
3	SS	6		50/6"					15		Bottom of Boring Auger Refusal @ 13.5'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

WATER LEVEL OBSERVATIONS			
W.L.	7.5' W.S. OR W.D.	5.0' A.B.	
W.L.	B.C.R.	A.C.R.	
W.L.			

Terracon Consultants, Inc.
Cedar Falls Cedar Rapids Davenport
Des Moines, IA
Kansas City Wichita, KS
Oklahoma City Tulsa, OK

BORING STARTED	8/30/82		
BORING COMPLETED	8/30/82		
RIG	2	FOREMAN	REF
APPROVED	JAC	JOB #	882528

LOG OF BORING NO. 5

OWNER CORN BELT POWER COOP

ARCHITECT-ENGINEER

SITE HUMBOLDT, IOWA

PROJECT NAME COAL PILE RUNOFF HOLDING POND

Sample No.	Type Sample	Sampling Distance	Recovery	Blows/ft.	Unconfined Compressive Strength-lbs./ft.^{2}	Water Content-%	Dry Density-lbs./ft.^{3}	Unified Class. Symbol	Depth	Elevation	Description
											Surface Elevation 1044.0
	PA										12" ash fill
											FINE TO COARSE SAND, Brown
											(3.5)
1	SS	18	14	70		16.5			5		HIGHLY WEATHERED LIMESTONE, (SILT AND SANDY SILT, TRACE GRAVEL), Light Brown and Gray Brown, Very Dense
	PA										
2	SS	16	7	87/10"		19.3			10		(10.0)
											Bottom of Boring

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

WATER LEVEL OBSERVATIONS			
W.L.	2.5' W.S. OR W.D.	2.5' A.B.	
W.L.	B.C.R.	A.C.R.	
W.L.			

Terracon Consultants, Inc.
Cedar Falls Cedar Rapids Davenport
Des Moines, IA
Kansas City Wichita, KS
Oklahoma City Tulsa, OK

BORING STARTED	8/30/82
BORING COMPLETED	8/30/82
RIG 2	FOREMAN REF
APPROVED JAC	JOB # 882528

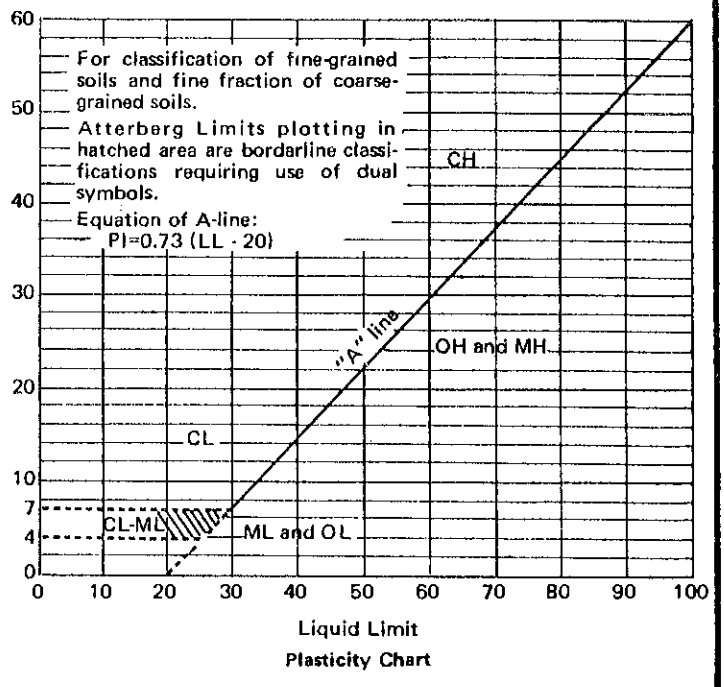
UNIFIED SOIL CLASSIFICATION SYSTEM

Major divisions			Group symbols	Typical names
Coarse-grained soils (More than half of material is *larger* than No. 200 sieve size)	Gravels (More than half of coarse fraction larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-grained soils (More than half of material is *smaller* than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
	Highly organic soils		Pt	Peat and other highly organic soils

Laboratory classification criteria

Determine percentages of sand and gravel from grain-size curve.
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
Less than 5 per cent . . . . . GW, GP, SW, SP
More than 12 per cent . . . . . GM, GC, SM, SC
5 to 12 per cent . . . . . *Borderline* cases requiring dual symbols

$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
Not meeting all gradation requirements for GW		
Atterberg limits below "A" line or P.I. less than 4		Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
Atterberg limits above "A" line with P.I. greater than 7		
$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
Not meeting all gradation requirements for SW		
Atterberg limits below "A" line or P.I. less than 4		Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols.
Atterberg limits above "A" line with P.I. greater than 7		



Plasticity Chart

TERRACON CONSULTANTS, INC.

Appendix D

Estimate of CCR Production 1979-1989

Humboldt Station
Ash Sluice Pond Data

Last Cleaned By Barge Dredge in July 1 1979
Coal Burned Since July 1 1979 41450
Ash Content of Coal at 14%
Ashes Placed in Sluice Pond Since July 1979 = 5803T
Volume of Ashes in Sluice Pond @ 50#/cuft = 232120 cu ft
Capacity of Sluice Pond in cu ft. 105 x 850 x 9 = 800,000
Dry Ash Weight = 50 #s / cu ft
Moist Ash Weight = 67 # / cu ft

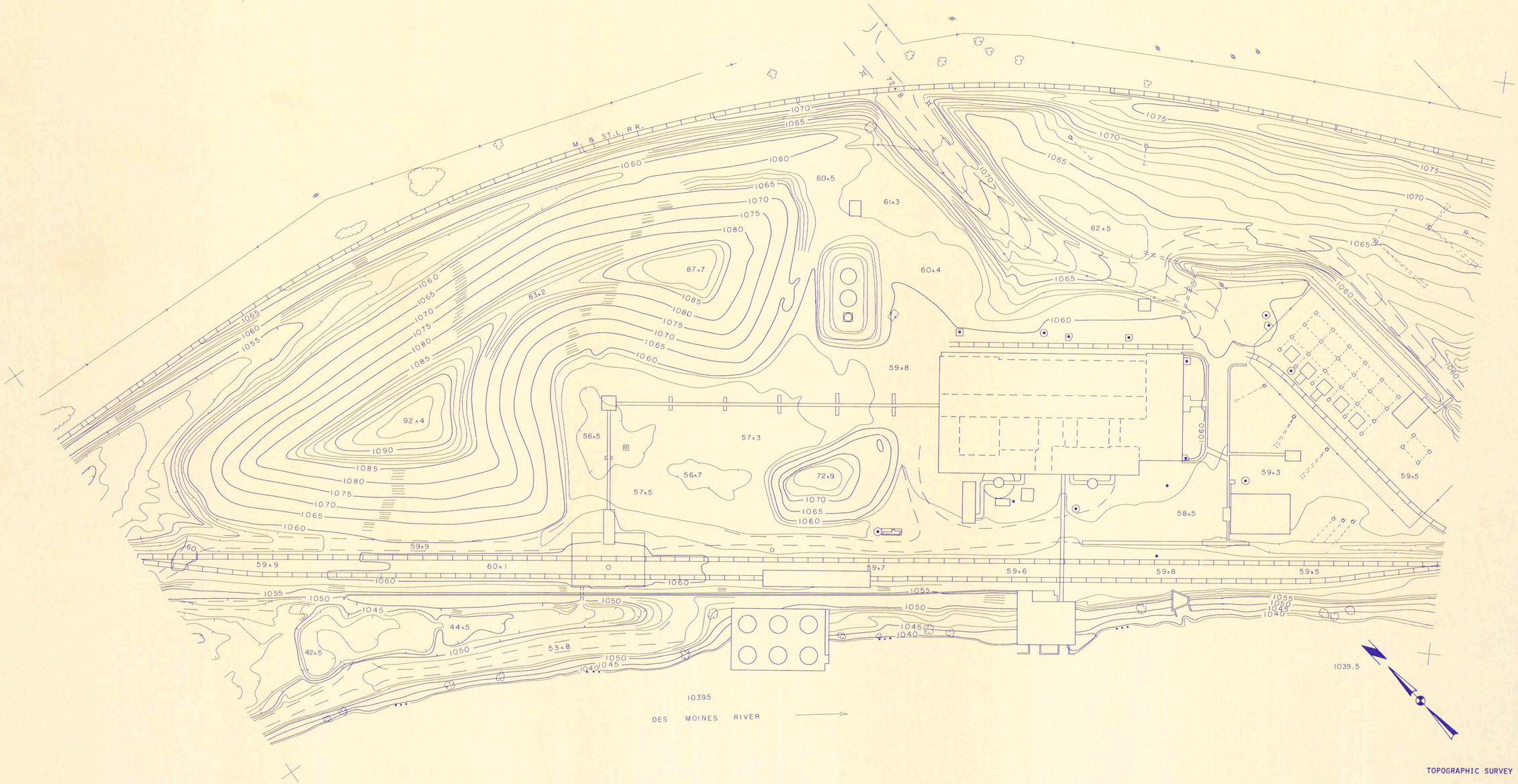
lbs

July 1979 -	4660 T	4660 T
80	6374	6374
81	968	968
82	917	12002 T TOTAL Prior to Aerial Elevations
		62,410 cu ft
83	1200	
84	1036	
85	7676	
86	10945	
87	2944	
88	3757	
89	1000	

41421 T TOTAL Since Cleaning
232,120 cu ft

Appendix E

1981 Aerial Survey



TOPOGRAPHIC SURVEY

scale 0 50 100

CONTOUR INTERVAL= 1 FOOT

ELEVATIONS BASED ON MEAN SEA LEVEL

COMPILED BY STEREOPHOTOGRAMMETRIC METHOD FROM AERIAL PHOTOGRAPHY

Date of Photography 10-29-81

HUMBOLT COUNTY

BEAVER TWP

T-91-N R-28-W

SEC 19

PAUL G. ALLEE
GENERAL MANAGER
2120 CENTER ST. (HWY. 218 N)
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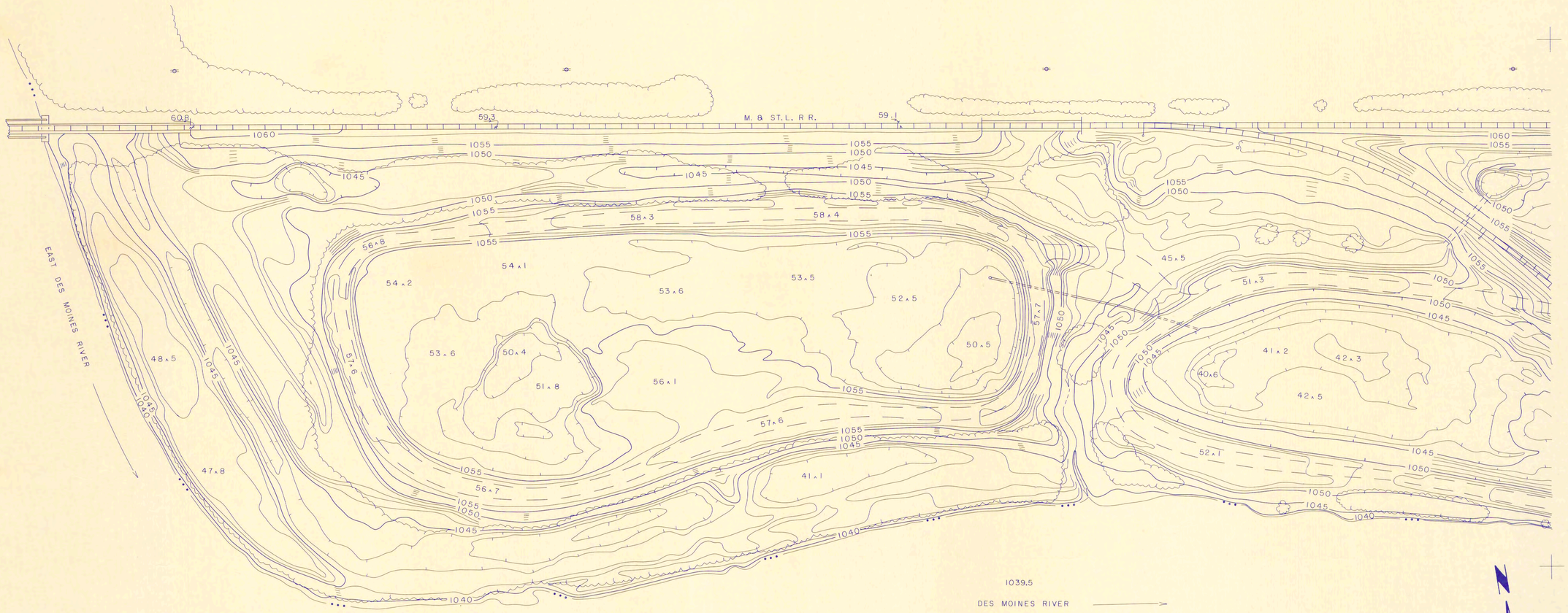
(319) 266-6181



TOPOGRAPHIC SURVEY

scale 0 50 100

HUMBOLT COUNTY

BEAVER TWP

T-91-N R-28-W

SEC 19

CONTOUR INTERVAL= 1 FOOT

ELEVATIONS BASED ON MEAN SEA LEVEL

COMPILED BY STEREOPHOTOGRAMMETRIC METHOD FROM AERIAL PHOTOGRAPHY

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asi

PAUL G. ALLEE
GENERAL MANAGER

2120 CENTER ST. (HWY. 218 N)
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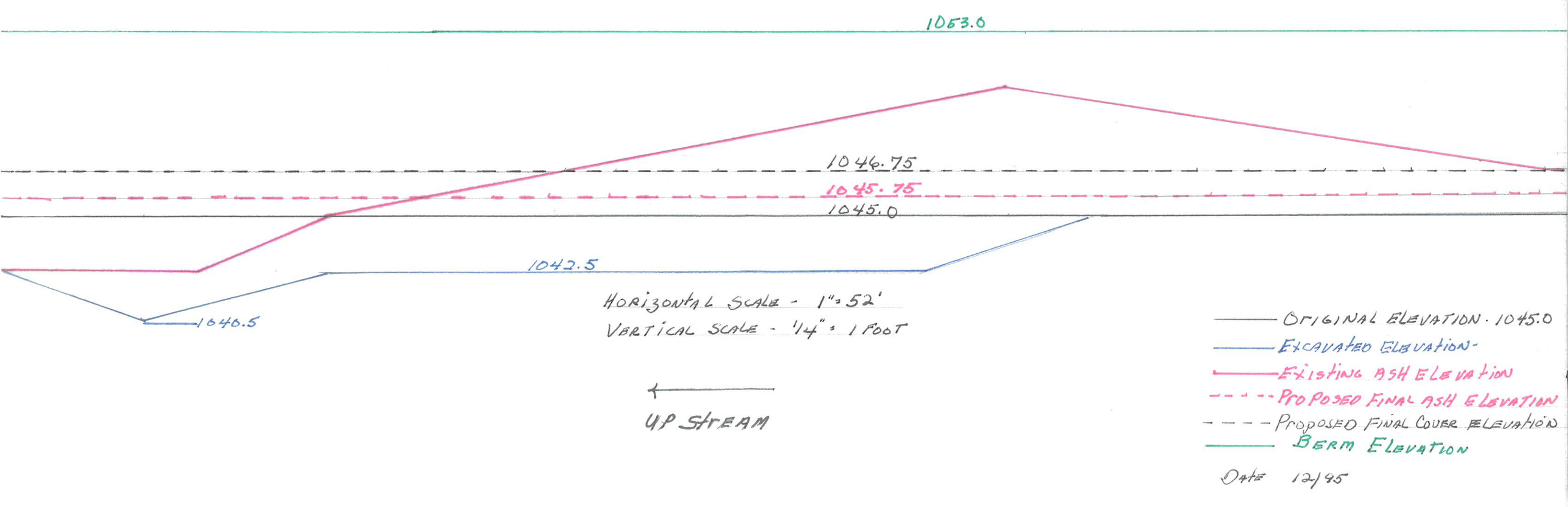
(319) 266-6181

Appendix F

1995 Hand Sketch

HUMBOLDT STATION

ASH SLUICE POND



DATE 12/95

Appendix G

Site Visit Photographs

Site Photographs

Photo 1. March 13, 2025. Test trench 1 showing initial surface conditions and shallow CCR.

Photo 2. March 13, 2025. Trench spoils.

Site Photographs

Photo 3. March 13, 2025. Test trench 2 showing apparent CCR layers.

Photo 4. March 13, 2025. Test trench 3.

Site Photographs

Photo 5. March 13, 2025. Test trench 4.

Photo 6. March 13, 2025. Test trench 4 extended deeper than in Photo 5.

Site Photographs

Photo7. March 13, 2025. Typical former CCR ash pond conditions.

Photo 8. March 13, 2025. Mini excavator at test trench 3 location at east end of the former ash pond..

Site Photographs

Photo 9. March 13, 2025. Example of ash pond existing conditions.

Photo 10. March 13, 2025. Test trench 4 location toward west end of former ash pond.

Site Photographs

Photo 11. March 13, 2025. Des Moines River to the south of berm along the former ash pond.

Photo 12. March 13, 2025. Berm looking east toward former Humboldt Station location.